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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/679,940	10/06/2003	Michael W. Johnson	2267.502US03	3599

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EXAMINER	
FISCHER, JUSTIN R	
ART UNIT	**PAPER NUMBER**
1733	

DATE MAILED: 01/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/679,940	JOHNSON ET AL.	
	Examiner	Art Unit	
	Justin R. Fischer	1733	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 October 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10 and 18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10 and 18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-9 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kramer (US 5,290,387, of record) and further in view of Benway (US 5,884,190, of record). As best depicted in Figure 3, Kramer is directed toward a weld head for welding tubular components of plastics material comprising a weld head body, a composite heater portion, and a heater element (Column 2, Lines 55-62). Kramer further depicts the composite heater portion as being defined by a central heated section that is sandwiched between a pair of secondary sections or holding jaws, such that said secondary sections (29) are formed of a **poorly heat conducting material** and said central heated section (28) is formed of a highly conductive material (copper). Thus, said secondary sections are formed of the same poorly conductive material having a thermal conductivity that is less than the thermal conductivity of the material used in the central heated section. While the reference fails to expressly describe the use of a nonmetallic material for the secondary sections, it would have been obvious to select such a material in view of the general teaching of Kramer to use a **poorly heat conducting material** and further, in view of the well known use of nonmetallic materials

in welding apparatus to obtain low conductive regions, as evidenced by Benway (Column 2, Lines 1-5). Thus, the use of a nonmetallic material to form the secondary sections of Kramer would have been well within the purview of one of ordinary skill in the art at the time of the invention in view of Benway, it being noted that the non-conductive materials suggested by Benway are the exact same materials disclosed by the claimed invention (polybenzimidazole and suitable ceramics). Lastly, in regards to the claimed difference in thermal conductivities, the reference clearly desires a highly conductive material for the central heated section and low conductive material for the secondary heated sections- absent any conclusive showing of unexpected results, one of ordinary skill in the art at the time of the invention would have found it obvious to from the central heated section from a material having a thermal conductivity that is at least twice as great as that of the material used to form the secondary sections.

As to claims 1-9, it should initially be noted that while Benway, in describing the use of non-conductive materials, is not specifically referring to a pair of secondary sections, the reference generally communicates the use of polybenzimidazole and suitable ceramics in welding apparatus where non-conductive properties are desired. Thus, since Kramer recognizes the need for a poorly heat conducting material and Benway suggests the common use of polybenzimidazole and suitable ceramics to form a non-conductive region in a welding apparatus, it would have been obvious to one of ordinary skill in the art at the time of the invention to form the secondary sections of Kramer out of a nonmetallic material having a low thermal conductivity, especially polybenzimidazole or suitable ceramics in view of Benway.

Regarding claims 2 and 9, Kramer suggests the use of copper to form the central heated sections (Column 2, Lines 59-62).

With respect to claims 4, 7, and 8, Kramer describes the central section as being formed of a material having a **good heat conductivity**, such as, for example, copper. While Kramer fails to specifically suggest the use of a ceramic material, ceramic materials are used in welding apparatus depending on the desired properties, as evidenced by Benway describing "suitable ceramics". Furthermore, it is well known that ceramic materials have a wide range of thermal conductivities and the selection of any one of ceramic material would be dependent on the desired properties. Therefore, since Kramer expressly describes the claimed thermal variation extending from the welding point and Benway suggests the well known use of ceramics in welding apparatus, one of ordinary skill in the art at the time of the invention would have readily appreciated the use of a first and second ceramic material having different thermal conductivities to form the respective heated sections in Kramer.

Regarding claim 18, the assembly of Kramer in view of Benway would have been expected to form a melt zone in an analogous manner to that of the claimed invention.

3. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kramer and Benway as applied to claim 5 above, and further in view of Richter (US 5,814,181, of record). As stated above, Kramer in view of Benway discloses a welding apparatus formed of a central heated section and a pair of secondary isolation sections, such that the central heated section is formed of a material having a higher thermal conductivity (copper) as compared to the material used in the secondary isolation sections

(nonmetallic). However, Kramer is completely silent with respect to the use of a stainless steel coating to minimize adhesion, as described by applicant (Page 14, 3rd Paragraph). In any event, such surface coatings are extremely conventional in heating apparatus to prevent the heating element from adhering to the tubular articles. For example, Richter specifically suggests the use of a layer or covering to prevent the thermoplastic from adhering to the heating element (Column 6, Lines 15-18). It should be noted that although Richter suggests the use of a PTFE layer or covering, it is clearly evident that such a design is exemplary, with additional, low adhesion materials being within the scope of the invention. In this instance, one of ordinary skill in the art at the time of the invention would have readily recognized the use of stainless steel in such a layer since it is used extensively in the manufacture of welding apparatus and provides the desired low adhesion properties, as suggested by applicant and Richter. As such, it would have been obvious to one of ordinary skill to include a stainless steel covering to eliminate adherence of the tubular articles to the central heated section, as suggested by Richter and conventional welding technology, in the welding apparatus of Kramer, as detailed above.

Response to Arguments

4. Applicant's arguments filed October 31, 2005 have been fully considered but they are not persuasive.

Applicant initially argues that Benway does not discuss or deal with thermal conductivities and furthermore, the reference is concerned with an electrical arc welding apparatus and thus constitutes non-analogous art. Kramer expressly teaches a welding apparatus formed of a central, highly heat conducting material and a pair of surrounding, poorly heat conducting materials- it is emphasized that the desire to have the above noted variation in thermal properties on each side of the weld zone is expressly disclosed by Kramer. In choosing a poorly heat conducting material, one of ordinary skill in the art at the time of the invention would have looked for such materials within the welding industry. In this instance, Benway specifically discloses the exact materials of the claimed invention in a welding apparatus and teaches that they are non-conductive, temperature resistant, and provide insulative properties (Column 2, Lines 1-5 and Column 3, Lines 10-20). Given the desired properties of Kramer, one of ordinary skill in the art at the time of the invention would have found it obvious to form the secondary sections of Benway from the claimed materials (ceramics or PBI). The disclosure of Benway clearly suggests that such materials have sufficient properties/characteristics to provide insulative (electrical and thermal) properties in a welding apparatus, which properties are expressly desired in the secondary sections of Kramer. It is further noted that these materials as generally recognized as having a low electrical conductivity and a low thermal conductivity. Lastly, the non-conductive components of Benway (rotor and teeth) formed of ceramics or PBI are positioned adjacent a conductive member formed of copper- this is the identical arrangement of Kramer.

Applicant further argues that the history of the welding art teaches away from the use of plastics under such circumstances (formation of molten plastic) and thus a person skilled in the art would have no motivation to look in the area of plastics. First, the independent claims as currently drafted are more broadly directed to non-metallic materials. Second, Benway suggests that some plastics, such as PBI, are art-recognized as having sufficient insulative properties (low electrical and heat conducting properties) to be used in a welding apparatus. As noted above, the non-conductive components of Benway are arranged adjacent a conductive member formed of copper in analogous manner to the claimed invention. It is emphasized that while the use of plastics might have been avoided in the past, Benway clearly teaches the use of plastic materials having suitable insulative properties in the manufacture of welding apparatus. Given this disclosure, there would have been a reasonable expectation of success in forming the weld head of Kramer with secondary sections formed of ceramics or PBI.

As to the competitor's application, it is emphasized that Kramer specifically recognizes a weld head construction having variable thermal properties and this appears to be the general concept embodied in each of the current application and the competitor's application.

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Justin R. Fischer** whose telephone number is **(571) 272-1215**. The examiner can normally be reached on M-F (7:30-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (571) 272-1226. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Justin Fischer

Justin Fischer

January 11, 2006